

## CNX82A.W, CNX83A.W, SL5582.W & SL5583.W

### DESCRIPTION

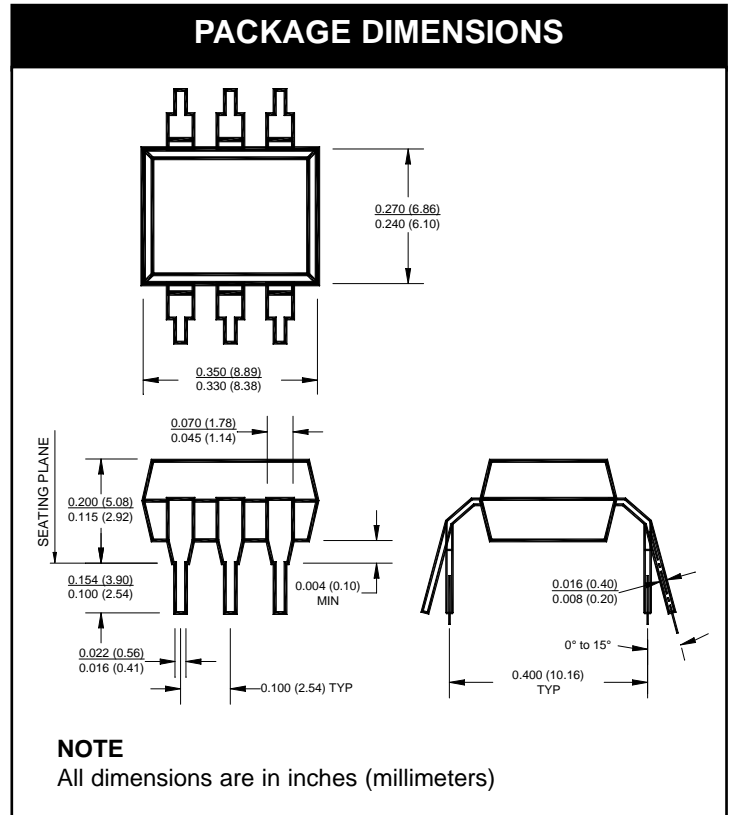
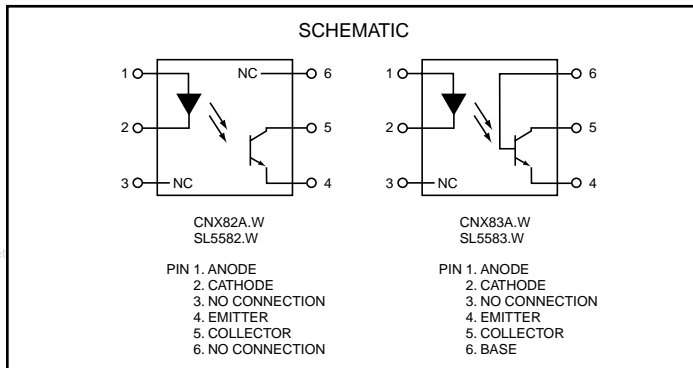
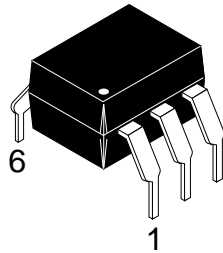
The CNX82A.W, CNX83A.W, SL5582.W AND SL5583.W, consist of a gallium arsenide infrared emitting diode driving a silicon phototransistor in a 6-pin dual in-line package.

### FEATURES

- Input/Output pin distance 10.16 mm
- UL recognized (File # E90700)

### APPLICATIONS

- Power supply regulators
- Digital logic inputs
- Microprocessor inputs



### ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Units
<b>TOTAL DEVICE</b>			
Storage Temperature	$T_{STG}$	-55 to +150	°C
Operating Temperature	$T_{OPR}$	-55 to +100	°C
Lead Solder Temperature	$T_{SOL}$	260 for 10 sec	°C
Junction Temperature	$T_J$	125	°C
Total Device Power Dissipation @ $T_A = 25^\circ\text{C}$	$P_D$	250	mW
<b>EMITTER</b>			
DC/Average Forward Input Current	$I_F$	100	mA
Reverse Input Voltage	$V_R$	5.0	V
Forward Current - Peak (1 $\mu\text{s}$ pulse, 300pps)	$I_F(pk)$	3.0	A
LED Power Dissipation @ $T_A = 25^\circ\text{C}$	$P_D$	140	mW
Derate above 25°C		1.33	mW/°C
<b>DETECTOR</b>			
Collector-Emitter Voltage	$V_{CEO}$	50	V
Collector-Base Voltage (CNX83A)	$V_{CBO}$	70	V
Emitter-Collector Voltage	$V_{ECO}$	7	V
Continuous Collector Current	$I_C$	100	mA
Detector Power Dissipation @ $T_A = 25^\circ\text{C}$	$P_D$	150	mW
Derate above 25°C		2.0	mW/°C

## CNX82A.W, CNX83A.W, SL5582.W & SL5583.W

### ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C Unless otherwise specified.)

#### INDIVIDUAL COMPONENT CHARACTERISTICS

Parameter	Test Conditions	Symbol	Device	Min	Typ**	Max	Unit
<b>EMITTER</b>							
Input Forward Voltage	(I <sub>F</sub> = 10 mA)	V <sub>F</sub>	ALL		1.2	1.50	V
Reverse Leakage Current	(V <sub>R</sub> = 5.0 V)	I <sub>R</sub>	ALL		0.001	10	μA
<b>DETECTOR</b>							
Collector-Emitter Breakdown Voltage	(I <sub>C</sub> = 1.0 mA, I <sub>F</sub> = 0)	BV <sub>CEO</sub>	ALL	50	100		V
Collector-Base Breakdown Voltage	(I <sub>C</sub> = 100 μA, I <sub>F</sub> = 0)	BV <sub>CBO</sub>	CNX83A.W SL5583.W	70	120		V
Emitter-Collector Breakdown Voltage	(I <sub>E</sub> = 100 μA, I <sub>F</sub> = 0)	BV <sub>ECO</sub>	ALL	7	10		V
Collector-Emitter Dark Current	(V <sub>CE</sub> = 10 V, I <sub>F</sub> = 0)	I <sub>CEO</sub>	ALL		0.001	0.050	μA
	(V <sub>CE</sub> = 10 V, I <sub>F</sub> = 0) (T <sub>A</sub> = 70°C)		CNX82A.W CNX83A.W		0.5	10	
	(V <sub>CE</sub> = 10 V, I <sub>F</sub> = 0) (T <sub>A</sub> = 100°C)		SL5582.W SL5583.W			0.5	
	(V <sub>CE</sub> = 10 V, I <sub>F</sub> = 0) (T <sub>A</sub> = 100°C)		SL5582.W SL5583.W			50	
Collector-Base Dark Current	(V <sub>CB</sub> = 10 V)	I <sub>CBO</sub>	CNX83A.W SL5583.W			20	nA
Capacitance	(V <sub>CE</sub> = 0 V, f = 1 MHz)	C <sub>CE</sub>	ALL		8		pF

Note

\*\* Typical values at T<sub>A</sub> = 25°C

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## CNX82A.W, CNX83A.W, SL5582.W & SL5583.W

TRANSFER CHARACTERISTICS (T <sub>A</sub> = 25°C Unless otherwise specified.)							
DC Characteristic	Test Conditions	Symbol	Device	Min	Typ**	Max	Units
Current Transfer Ratio, Collector-Emitter	(I <sub>F</sub> = 10 mA, V <sub>CE</sub> = 0.4 V)	CTR	ALL	40			%
	(I <sub>F</sub> = 10 mA, V <sub>CE</sub> = 5 V)		CNX82A.W	40		250	
			CNX83A.W	40		320	
	(I <sub>F</sub> = 10 mA, V <sub>CE</sub> = 5 V) (T <sub>A</sub> = 100°C)		SL5582.W	25		320	
			SL5583.W	25		320	
	(I <sub>F</sub> = 1 mA, V <sub>CE</sub> = 5 V)		CNX82A.W	10		100	
	(I <sub>F</sub> = 2 mA, V <sub>CE</sub> = 5 V)		SL5582.W	20			
	(I <sub>F</sub> = 2 mA, V <sub>CE</sub> = 5 V) (T <sub>A</sub> = 100°C)		SL5583.W	15			
Saturation Voltage	(I <sub>F</sub> = 10 mA, I <sub>C</sub> = 4 mA)	V <sub>CE(sat)</sub>	ALL		0.19	0.4	V
Turn-on Time	(I <sub>C</sub> = 2 mA, V <sub>CC</sub> = 5 V, R <sub>L</sub> = 100 Ω)	t <sub>on</sub>	ALL		3		μs
	(I <sub>C</sub> = 2 mA, V <sub>CC</sub> = 5 V, R <sub>L</sub> = 1 kΩ)		ALL		12		
	(I <sub>F</sub> = 16 mA, V <sub>CC</sub> = 5 V, R <sub>L</sub> = 1 kΩ)		SL5582.W			20	
Turn-off Time	(I <sub>C</sub> = 2 mA, V <sub>CC</sub> = 5 V, R <sub>L</sub> = 100 Ω)	t <sub>off</sub>	ALL		3		μs
	(I <sub>C</sub> = 2 mA, V <sub>CC</sub> = 5 V, R <sub>L</sub> = 1 kΩ)		ALL		12		
	(I <sub>F</sub> = 16 mA, V <sub>CC</sub> = 5 V, R <sub>L</sub> = 1 kΩ)		SL5582.W			50	
SL5583.W							

ISOLATION CHARACTERISTICS							
Characteristic	Test Conditions	Symbol	Min	Typ**	Max	Units	
Input-Output Isolation Voltage	(I <sub>I-O</sub> ≤ 1 μA, 1 min.)	V <sub>ISO</sub>	5300			Vac(rms)	
Isolation Resistance	(V <sub>I-O</sub> = 500 VDC)	R <sub>ISO</sub>	10 <sup>11</sup>			Ω	
Isolation Capacitance	(V <sub>I-O</sub> = ∅, f = 1 MHz)	C <sub>ISO</sub>		0.5		pf	
External air gap (clearance)			9.6			mm	
External tracking path (creepage)			8.0			mm	
Internal plastic gap (clearance)			1.0			mm	

Note  
 \*\* Typical values at T<sub>A</sub> = 25°C

### ORDERING INFORMATION

Option	Order Entry Identifier	Description
300	.300W	VDE 0884

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### TYPICAL CHARACTERISTICS

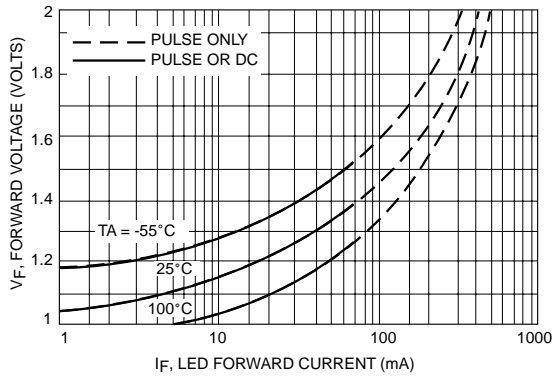


Figure 1. LED Forward Voltage versus Forward Current

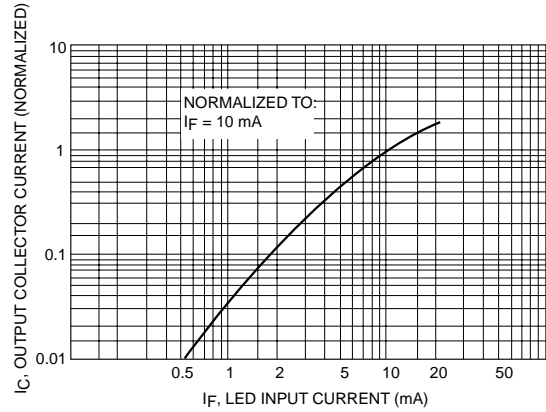


Figure 2. Output Current versus Input Current

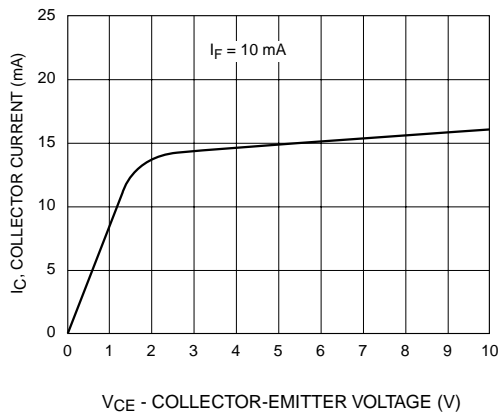


Figure 3. Collector Current versus Collector-Emitter Voltage

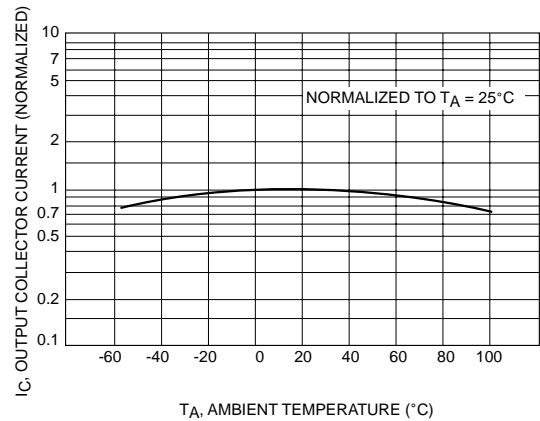


Figure 4. Output Current versus Ambient Temperature

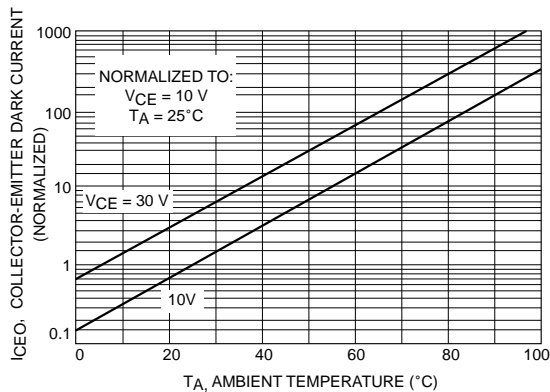


Figure 5. Dark Current versus Ambient Temperature

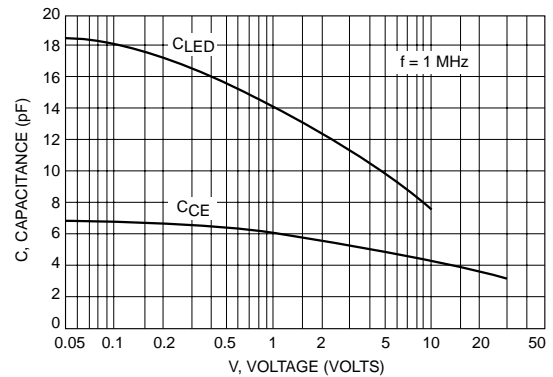
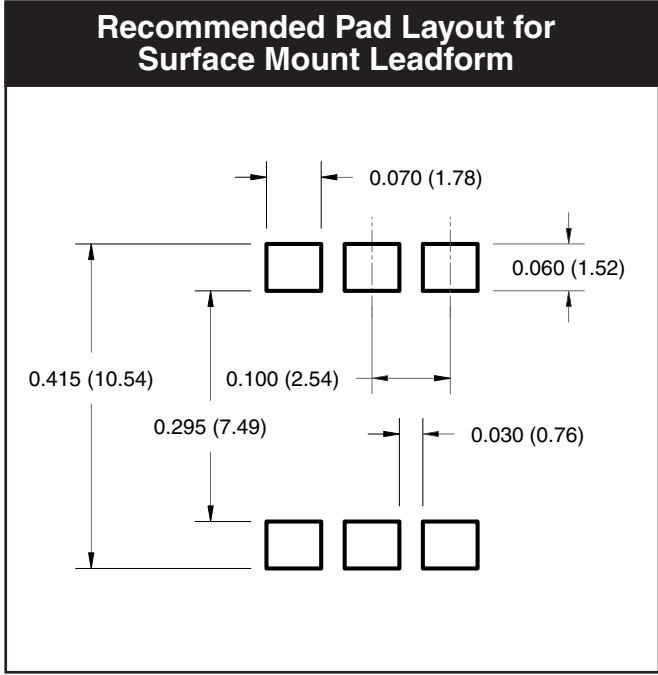
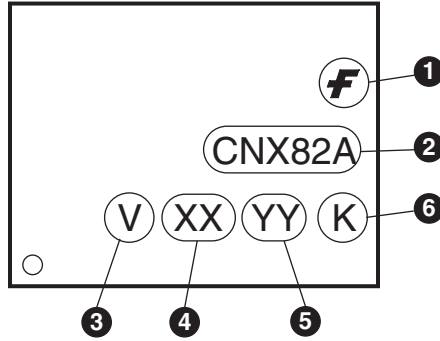


Figure 6. Capacitance versus Voltage



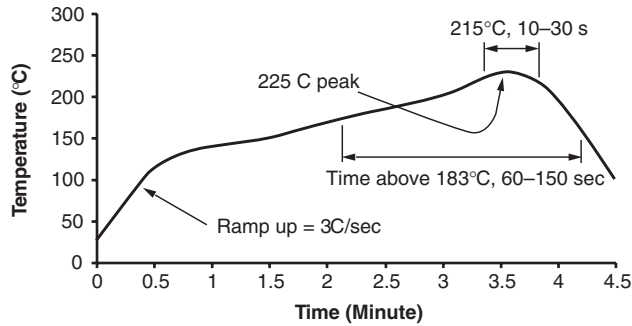
**Note**  
All dimensions are in inches (millimeters)

**MARKING INFORMATION**



Definitions	
1	Fairchild logo
2	Device number
3	VDE mark (Note: Only appears on parts ordered with VDE option – See order entry table)
4	Two digit year code, e.g., '03'
5	Two digit work week ranging from '01' to '53'
6	Assembly package code

**Reflow Profile (Black Package, No Suffix)**



- Peak reflow temperature: 225°C (package surface temperature)
- Time of temperature higher than 183°C for 60–150 seconds
- One time soldering reflow is recommended

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